A STUDY TO ASSESS THE EFFECTIVENESS OF INTRADIALYTIC MUSCLE STRETCHING EXERCISES ON THE LEVEL OF PAIN DURING MUSCLE CRAMPS AMONG PATIENTS UNDERGOING HEMODIALYSIS IN A SELECTED HOSPITAL AT KERALA.

BY

TOM MATHEW

A DISSERTATION SUBMITTED TO THE TAMILNADU Dr. M.G.R. MEDICAL UNIVERSITY, CHENNAI IN PARTIAL FULFILMENT OF REQUIREMENT FOR THE DEGREE OF

MASTER OF SCIENCE IN NURSING

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"Knowledge is the end based on acknowledgement '

Ludwig Wittgenstein- 1889

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CHAPTER I

INTRODUCTION

Chronic kidney disease, also called chronic kidney failure, describes the gradual loss of kidney function. The kidneys filter wastes and excess fluids from the blood, which are then excreted in the urine. When chronic kidney disease reaches an advanced stage, dangerous levels of fluid, electrolytes and wastes can build up in your body.

The kidneys play three major roles such as removing waste products from the body, keeping toxins from building up in the bloodstream producing hormones that control other body functions such as regulating blood pressure, producing red blood cells regulating the levels of minerals or electrolytes like, sodium, calcium, and potassium) and fluids in the body **(Chug., 2006).**

Hemodialysis is the common treatment for kidney failure. According to worldwide statistics about 9,20,000 people are undergoing hemodialysis per day, while considering the total population.

Hemodialysis is an epochal medical technology and in 1960's it is introduced clinically to improve the life expectancy among the patients suffering from chronic kidney disease. Each session of hemodialysis lasts for about four to six hours, like wise it is done for two or three times in a week. The patient's confidence level can be improved and the problems associated with renal failure can be decreased with the use of hemodialysis **(Monfared et al., 2009).**

A cramp defined as a prolonged involuntary muscle contraction, is the most common acute, neuro muscular complication occurring in the hemodialysis patients. The cumulative incidence of cramps was 86% over 14000 hemodialysis treatment in 103 patients**.** It is known that immediate relief from cramp may be obtained by periodic stretching of an affected muscle. Recently many studies show the importance of exercises

on regular physical activity to maintain the electrolytes in End Stage Renal Disease patients. **(VJ Canzanello 1992).**

The muscle cramps are the common complication of the patients undergoing hemodialysis. Approximately about 33% to 86% of patients undergoing hemodialysis experience muscle cramps, so in order to avoid the muscle cramps in the end of dialysis procedure, should provide a special attention to the muscle cramps by performing specific interventions to promote the comfort of the patient.

In a study from 2001, 25% of patients experienced hemodialysis treatment in which two or more experienced muscle cramps weekly. Involuntary muscle contraction arises with severe muscle pain. It occurs mostly in patients undergoing dialysis. The cramps usually involve legs, feet, arms and hands, it also occurs in the abdominal muscles too. (**Holley, 2012; Kobrin & Berns, 2007**).

Muscle cramps usually begins with muscle twitches or fasciculations and are not only related to muscles but also related to some of the nerve conduction (**Holley, 2012**). There are several factors which influences the cramps among hemodialysis patients, which mainly includes hypotension, volume contraction, hyponatremia, hypomagnesemia, tissue hypoxia, deficiency of carnitine, elevated serum leptin and changes in plasma osmolality (**Holley, 2012; Kobrin & Berns, 2007**).

Cramps occur late in the dialysis treatment at a time when changes in the extracellular fluid volume and plasma osmolarity are maximal. The lower extremity musculature is most commonly involved altogether the hands, legs, or the abdominal; muscles may also be affected. The contracted muscles are always palpable to the patient or the dialysis attendant**. (John M Burkart oct. 1992.)**

Though cramps often last only few seconds but is very painful. It leads to poor quality of life measures, recurrent episodes which induce intradialytic dialysis for more complications, and chronic fluid retention from poor compliances. However rapid removal

of excess fluid and waste products by hemodialysis contributes to frequent occurring of muscle cramps, typically in lower extremities. Pain is one of the most common complaints in the clinical practice, because it is a symptom of a mind related to physical and mental problems. Intradialytic stretching exercises has a great value in reducing and even preventing the muscle cramps.

Muscle Stretching is a form of physical exercise in which a specific muscle or tendon (or muscle group) is deliberately flexed or stretched in order to improve the muscle's felt elasticity and achieve comfortable muscle tone. The result is a feeling of increased muscle control, flexibility and range of motion. Stretching is also used therapeutically to decrease cramps.

Frequent stretching can help keep the muscles from getting tight, allowing to maintain proper posture. Good posture can minimize discomfort and keep aches and pains at a minimum. Stretching relaxes tight, tense muscles that often accompany stress. Maintaining the full range-of-motion through the joints keeps body in better balance. Coordination and balance will help keep to more and less prone to injury from falls, especially as people get older. Stretching exercises helps to minimize the formation of lactic acid among the muscles and helps to eliminate the tightness that leads to the muscle damage. **(Kathleen Mccann, Jeniffer. R.P. Boore.2000)**

1.2 NEED FOR THE STUDY

In worldwide currently 2 million people are doing hemodialysis or a kidney transplant to stay alive, yet this number may only represent 10% of people who actually need treatment to alive.

In India, more than 10 lakhs people suffer from kidney failure and four crores peoples are at risk. It is estimated that there are about 55,000 patients on dialysis and annually the dialysis population is increasing at the rate of 10-20%. (Vivek. Jha.,2013).

In India with the majority of being in the private sector has approximately 400 dialysis units with 1,000 dialysis stations. Due to financial reasons that about 69-71% patients who were started on dialysis die on dialysis or stop treatment, the majority within the first three months of initiation of dialysis, and kidney transplant was done only 17-33% patients, and 8-10% who continue to be on hemodialysis and 60% receive irregular treatment. Only 2-4% is started on continuous ambulatory peritoneal dialysis. (Agarwal.,2005).

A muscle cramp is an involuntarily and forcibly contracted muscle that does not relax and it is characterized by an immediate involuntary muscle contraction with pain in that area and it originates from the peripheral nerves. The cramp may involve a part of a muscle, the entire muscle, or several muscles that usually act together, such as those that flex adjacent fingers. Some cramps involve the simultaneous contraction of muscles that ordinarily move body parts in opposite directions. The most commonly involved muscles are the triceps, hamstrings, quadriceps, (gastronomies). Almost all the patient's whomever undergoing dialysis complaints about muscle cramps, usually are treated by means of administering dextrose 25% and normal saline. Though there are several pharmacological therapies intradialytic stretching exercises can be performed by the patients to reduce and prevent the occurrence of the cramps.

A muscle cramp can be caused by dehydration, nerve compression, intermittent claudication and mineral imbalances etc. Stretching exercises can be done for the nocturnal leg as well as for the hemodialysis-related cramp which can be used to relax the foot and the ankle muscles from prolonged recliner position in the dialysis treatment. To decrease and eliminate the nocturnal cramps we can go for pre-bedtime stretching, from this we can clearly states that stretching is the first and foremost treatment for muscle cramps. **(Hallegraeff et al., 2012).**

Ahsam.et.al conducted a study to evaluate the feasibility of intra dialytic sequential compression devices (SCD) use on the prevention of hemodialysis related lower extremity cramping pain. Study find reduced application of sequential compression devices to lower extremities, prevented the generation of hemodialysis related cramping in 6 more cases.

Exercises plays an important role in maintaining the health and wellbeing of all age group. Stretching exercises are good enough to reduce and prevent muscle cramps among chronic renal failure patients undergoing hemodialysis **(Magda Mohamed, Amal Mohamed, Shalabia Abo Zead ,2007)**.

A study reveals that regular exercises interacts with one's nervous, cardiovascular and musculoskeletal systems and there by decreases the complications associated with the CKD. In some studies, there exists a clear knowledge regarding the relation of physical activity in reducing the complications associated with the CKD by doing some activities in the nervous, musculoskeletal and cardiovascular systems. The patients can do both the aerobic and resistance exercises in the dialysis units without any adverse effects and it will also help in the functional capacity of the patients and there by increases the quality of their life. (**Brenner I, 2009**).

Until now there are no reports regarding the risk of serious injuries during exercises done by the patients, interventions are going on in the regular basis. We want to incorporate stretching exercises with the routine care of the dialysis patients **(Johansen KL, 2007).**

There are vast benefits in doing muscle stretching exercises, it will improve the body stamina, helps in body and mind relaxation, which may also improve our focus and concentration, helps to warm the body up prior to activity thus decreasing the risk of injuries as well as muscle soreness. From the above studies there are several evidences that shows the stretching exercises are effective in reducing pain during muscle cramps.

Muscle cramps during hemodialysis cause decrease the quality of life of patients. Though there are many new advances to treat and prevent common clinical problems, intra dialytic exercises seems to be a simple non-pharmacological pain intervention to reduce the discomfort are associated with the pain. Nurses play an important role, to alleviate the pain caused by muscle cramps during the hemodialysis. So, the researcher felt the need to provide the intradialytic exercises to the hemodialysis patients and assess the effectiveness on level of pain during muscle cramps in the patients undergoing hemodialysis.

1.3 STATEMENT OF THE PROBLEM:

A study to assess the Effectiveness of Intradialytic Muscle stretching exercises on the level of pain during muscle cramps among patients undergoing hemodialysis in a selected hospital at Kerala.

1.4 OBJECTIVES:

- To assess the level of pain during muscle cramps among patients undergoing hemodialysis in the experimental and control group.
- To assess the effectiveness of intradialytic muscle stretching exercises on level of pain during muscle cramps in experimental and control group.
- To determine the association between the level of pain during muscle cramps among the patients undergoing hemodialysis and the selected demographic variables in the experimental and control group.

1.5 HYPOTHESIS:

H_1 – There is a significant difference in the posttest level of pain during muscle cramps among clients undergoing hemodialysis in the experimental and control.

H_2 – There is a significant association between level of pain during muscle cramps among clients undergoing hemodialysis and their selected demographic variables in the experimental and control group.

1.6 OPERATIONAL DEFINITIONS:

Effectiveness:

It refers to the effect of intradialytic muscle stretching exercise in the reduction in the level of pain during muscle cramps which is measured by using numerical pain rating scale.

Intradialytic muscle stretching exercises:

In this study it refers to the exercise performed by the clients on particular muscles such as the gastrocnemius, calf, hamstring, soleus, and the quadriceps muscles. These muscles are stretched and flexed in order to reduce the stiffness of the muscle and thereby increase the muscle tone and elasticity. They are usually initiated after the completion of 2^{nd} hour during dialysis for about 15 minutes with an interval of about half an hour for a total period of 3 consecutive dialysis cycles.

Muscle Cramps:

In this study Muscle cramps refers to the painful involuntary contraction of muscle which mainly felt in the lower limbs by the patients during hemodialysis.

Hemodialysis:

In this study it is the process of the treatment for the kidney failure patients in order to remove their waste products accumulated in the body through blood by using dialyzer.

1.7 ASSUMPTIONS:

- Hemodialysis will cause muscle cramps**.**
- Muscle cramps will cause severe pain during hemodialysis.
- Exercises restores blood flow and relax the muscle tightness and reduce pain.
- Intradialytic muscle stretching exercises helps to reduce the pain and discomfort of the patients during hemodialysis.

1.8 DELIMITATIONS:

> The period of study is limited to 6 weeks.

> The sample size is limited to 60.

> The study is limited to the age group of 20 to 60 years.

> The study is limited to a selected hospital.

> In this study the provided muscle stretching exercises were limited to the lower limb cramp pain during the intradialytic period.

1.9 PROJECTED OUTCOME:

The Intradialytic muscle stretching exercises can able to decrease the level of pain during muscle cramps that occurs among the patients undergoing hemodialysis.

CHAPTER II

REVIEW OF LITERATURE

Every research needs a good foundation to become a great success. Review of literature lays a good foundation for a new study. So, an entire chapter is given for literature review. It's the body of the research. Literature review can help to identify the appropriate research methods or relevant conceptual frameworks (**Polit, 2009**).

1. Studies related to prevalence of muscle cramps among the hemodialysis patients.
2. Studies related to effectiveness of intradialytic stretching exercises on muscle cramps in hemodialysis
3. Studies related to effect of stretching exercises on hemodialysis patients.

Studies related to prevalence of muscle cramps among the hemodialysis patients.

Tonci Brkovic, Eliana Burilovic, Livia Puljak, 2016 conducted a study on pain felt by the patients undergoing hemodialysis in Department of laboratory of pain research in Croatia. The prevalence of acute and chronic pain in hemodialysis patients was up to 82% and 92%, respectively. A considerable number of patients suffered from severe pain. Various locations and causes of pain were described, with most of the studies reporting pain in general, pain related to arteriovenous access, headache, and musculoskeletal pain. The findings of this systematic review indicate high prevalence of pain in HD patients and considerable gaps and limitations in the available evidence. Pain in this population should be recognized as a considerable health concern, and the nephrology community should promote pain management in HD patients as a clinical and research priority to improve patients' quality of life and pain-related disability. Muscle cramps are among the most frequent complications that can be seen during hemodialysis (HD) and so painful. They may occur in 35-86% of HD patients. They are typically found in lower extremities and may be severe enough to compromise hemodialysis treatment (kaze). In a study in London in 2011, intradialytic cramps where the commonest symptoms reported with hypotension.

Tarek A. Ghonemy, Halla M. Allam, Amir M. Elokely, 2015 conducted a study regarding the chronic pain and the bone mineral metabolism among the hemodialysis patients in the nephrology unit Zagazig university hospital Egypt. The aim of the study was to evaluate the prevalence and the possible cause of chronic pain in patients with the end stage hemodialysis. They enrolled 100 patients whom undergoing hemodialysis for 6 months or more and the pain was evaluated. They observed that the musculoskeletal pain was more among the patients. They also observed that malnutrition and disturbed bone metabolism are highly correlated with the incidence of pain.

Fiona Blytone, Vivienne Chuter and Joshua Burns., 2012 conducted a study to know about the night time muscle cramps. A survey was conducted to know the patient experience, treatment modalities and help seeking behavior. Almost all of the hemodialysis patients experienced leg cramps during the night time. The features of the muscle cramps mainly include soreness of the calf muscles during the day time along with the cramps. Comparing to the day time cramps night time cramps are more severe and can't be relieved by means of current therapies.

Allen RE, Kirby KA., 2012 conducted a study regarding the effect of nocturnal leg cramps. Cramps arises mainly due to the associated disease conditions such as lumbar canal stenosis, hemodialysis, vascular disease and other related medical conditions. Almost about 60% of the adults are affected by the muscle cramps during the bed time. The treatment modalities mainly given for the muscle cramps are administering magnesium, vitamin B12, calcium channel blockers. Non-pharmacological therapies like stretching can also be used for reducing muscle cramps. By the study it is clear that nocturnal leg cramps are common in adults

Holley., 2011 conducted a study to know the occurrence of muscle cramps among the hemodialysis and chronic kidney disease patients. There are about 33-96% of the patients experience muscle cramps. The study reveals that higher the level of serum

creatinine phosphokinase and lower the level of parathyroid hormone are the leading cause for muscle cramps. Increasing the rate of ultrafiltration and low level of sodium concentration in the dialysate affects the occurrence of the leg cramps.

J. Calls, M.A. Rodríguez Calero, D. Hernández Sánchez, M.J. Gutiérrez Navarro, F. Juan Amer, D. Tura, J.J. Torrijos, 2009 conducted a study in the hemodialysis Unit of Manacor Hospital. Mallorca, Balearic Islands, Spain to know the relation of chronic pain during muscle cramps among the hemodialysis patients. Patients more than 65 years of age were chosen for the study. A group of twenty-seven hemodialyzed patients were chosen for the study. Pain Questionnaire were prepared to know the level and intensity of the pain felt by the patients. Tests were administered firstly during the dialysis session for evaluating intradialytic pain, and another day out of the session to evaluate chronic pain. From the study it's clear that the Ischemic pain was the most common during the session (37%), whereas muscle-skeletal was more frequent out of the session (77%). Prevalence of pain was higher during the session (92.5%). The duration of the pain was less than one hour in 55% of cases and lasted the whole session in only 15% of cases. (92.5% of patients experienced intradialytic pain).

Mohseni Ret al., 2008 conducted a study on (Excessive dialysis ultrafiltration (UF), intradialytic hypotension or tissue hypoxia and elevation of serum creatine kinase may lead to an abnormal utilization of energy. Muscle cramps are the most prevalent intradialytic complication and an important difficulty for patients. The frequency of muscle cramps is about 35-86% during hemodialysis. Excessive ultrafiltration, intradialytic hypotension, electrolyte-mineral disturbances, hypoosmolality are the most frequent causes. Muscle cramps can be treated by isotonic-hypertonic saline or hypertonic dextrose solutions. Also, preventing hypotension, profiling sodium, vitamin E and C can be used to prevent muscle cramp

Timothy M. Miller 2005 conducted a study on effective non-pharmacological treatment for acute cramps, that is lengthening or stretching the cramping muscle and activating the antagonist muscles. This method helps to stop most cramps. Based on the observation that stretching treats acute cramps and that experimentally induced cramps do not occur in the nocturnal leg cramps will be reduced in 44 patients instructed to stretch their calf three times daily. Stretching before exercise is probably an effective method to prevent cramps.

Gerald M. Devins, Susan J. Armstrong, Henry Mandin 1990 conducted a study on the recurrent pain and illness intrusiveness and the quality of the life among the chronic renal patients. Standard measures of pain, illness intrusiveness, and quality of life were obtained on 2 occasions, each 6 weeks apart, from 100 end-stage renal disease. The impact of recurrent muscle cramps on perceptions of illness intrusiveness was conditional upon the occurrence of headache symptoms, Perceptions of illness intrusiveness were significantly higher when both muscle cramp and headache symptoms occurred during one or more assessment intervals as compared to when muscle cramps or headaches, only, occurred. Illness-related concerns and general feelings of pessimism were also significantly higher among patients who experienced recurrent episodes of muscle cramp. Although no direct relations were observed between pain and other quality of life indicators, previous research has documented a relation between illness intrusiveness and quality of life. Recurrent pain problems, thus, appear to contribute to increased illness intrusiveness and to reduced quality of life in end-stage renal disease patients.

Studies related to effectiveness of intradialytic stretching exercises on muscle cramps during hemodialysis.

Azra Sadat Musavian et al., 2015 conducted a study to compare the active and passive intradialytic pedaling exercises in hemodialysis patients A quasi-experimental study was conducted in the dialysis center of Akhavan Hospital, Iran. The study was

conducted for 8 months among 18 patients in the centre. For the first 8 weeks all the patients were dialyzed using high-flux dialyzer membranes. Afterwards passive intra dialytic exercises were given to the patients using electrically powered mini bike which is arranged near to the patient's bed and the exercise was given to each patient for 30 minutes per session during the first 2 hours of dialysis session. The total experiment was conducted for a period of 8 weeks. After the completion of 8 weeks of passive exercises for next 8 weeks active intradialytic pedaling exercise was performed similarly. The variables are compared by using the tests such as the Wilcoxon signed rank Friedman tests and Paired t-test. The level of significance was comparatively less than 0.05 from the above-mentioned tests. By these two types of exercises the quality of life among the patients improved a lot.

Hallegraeff JM et al., 2013 conducted a study to assess the nocturnal leg cramps felt before sleep a randomized controlled study was done among the older adults. 80 adults whom are all above 55 years of age was chosen whom are all having nocturnal leg cramps and not in the treatment of quinine. A visual analogue scale with 10 cm is used to assess the pain level as well as the frequency of leg cramps. Pretest and posttest values are obtained. After a period of 6 months the leg cramps gradually decreased among the experimental group. The stretching exercises before bed time reduces the nocturnal leg cramps.

Silva SF, et al., 2013 conducted a study among the patients with chronic kidney disease to know the physical therapy in relation to the hemodialysis. Total of 56 patients were involved. The exercise pattern consists of stretching, muscle strengthening and stationary exercises. Evaluation done before starting the exercise and after the exercise and there observed an improved quality of life among the patients with chronic kidney disease after the exercises.

Basemath. S. S. Morris, 2014 conducted a study on selected hospitals in Chennai among the hemodialysis patients to know the uses of intradialytic stretching exercises. 45

hemodialysis patients who experienced muscle cramps were involved in the study and pretest posttest was done. Intradialytic exercises were given every 30 minutes in the last two hours of dialysis, by doing the stretching exercises regularly helps to prevent the muscle cramps.

Kirkman et al., 2014 conducted a stud**y** in order to check the impact on muscle volume, muscle strength and physical functions induced by the intra-dialytic progressive resistance exercise training (PRET)among the hemodialysis patients and non- hemodialysis healthy patients. Randomized Controlled Study was conducted. 23 hemodialysis and 9 non- hemodialysis patients were randomized to PRET in this single-blind controlled study, in which high-intensity leg press exercises and low-intensity lower body stretching activities using ultra-light resistance bands i.e. controlled (SHAM) therapy was done thrice weekly. After the interventional period of about 12 weeks, there is a significant increase in the muscle volume for the patients undergone PRET which is evidenced by taking MRI compared to the SHAM therapy done in the hemodialysis group resulted in the significant loss of muscle volume

Giannaki CD, et al., 2013 conducted a study among the ten-stable high-functioning hemodialysis patients in order to determine the efficiency of hemodialysis by effect of prolonged intradialytic exercise, instead of normal exercise patterns. Three hours of supine exercise (cycling) was performed at 40% and excludes usual exercises. To check the hemodialysis efficiency, pre and post hemodialysis blood sampling was done. No adverse effects of exercises were found among the patients. The ratio of urea and creatine improved by 20% and 26% and there observed a reduced potassium plasma levels by 77.5% ($p < 0.05$). there by we can un doubtfully say that we can improve the hemodialysis efficiency by prolonged low-intensity exercise during the intradialytic period with no signs of adverse effects.

Paul N Bennett et al., 2013 conducted a study to examine the effect of coordinated resistance exercise with the physical function, a randomized control study was conducted in Deakin University among the hemodialysis patients. An exercise program was conducted for 12, 24 and 36 weeks respectively among 180 participants. 15–20 repetitions for each exercise postures were done and they include dorsi flexion, leg abduction, plantar flexion, knee extension, straight-leg knee flexion in a seated position and bent-knee raise. The α value for three tests were ($p<0.05$) (standard) which was divided by three $\alpha = 0.0167$. This study it clearly stated that by doing the exercise patterns the physical functions of the hemodialysis patients improved a lot

Justine Magnard, **et al., 2013** conducted a study to know the impact of an intra-dialytic exercise program along with nutritional support to know the body composition functional performance and quality of life. A controlled study was done among 210 patients treated for hemodialysis, a six-month program with cycling exercise conducted three sections per week and done in the dialysis session during the first two hours using an adapted cycle ergometer and 30 minutes of continuous cycling. By this method the functional performance of the dialysis patients improved a lot. $p < 0.05$ was the level of significance.

Kirsten P Koh, et al., 2009 conducted a study on 485,000 population approximately at Burnie Satellite Renal Unit in Northern Tasmania. The Launceston General Hospital and Hobart Renal Unit. The main objective of the study was to supervise the intradialytic and the exercises that performed in the home and to know the relation with the arterial stiffness and physical function among the patients. So, the patients are allowed to do cycling for the first two hours of dialysis session, total three times in a week for total period of six months. There is a slight deviation in the exercise pattern for the home-based patients. They are allowed to walk for two hours of each dialysis session for a period of six months. To assess the energy expenditure of each session by the individuals, the duration

(minutes) and Power output (w) for each session were recorded. The final results say that there is an improvement of 10% in 6 MWD and is statistically significant $p < 0.05$ ($\alpha = 0.05$, and $\beta = 0.9$).

Chadchavalpanichaya, Srisawasdi, Suwannakin, 2009 conducted a study to know the effect of stretching exercise in muscle cramps. 80 patients were chosen whom are all above 45 years of age experiencing calf muscle tightness. They were divided into two group each study group and control group. The calf muscle stretching was done using calf stretching box. The patients were advised to do the stretching for two weeks, each day the exercise is done for 2 times for a duration of 1 minute each. Frequency duration and complications for each day was recorded. By the study its clearly noted that by doing the calf muscle stretching exercise using the calf stretching box the muscle tightness reduced compared to the conventional exercise method.

Magda Mohamed, Amal Mohamed, Shalabia Abo Zead, 2007 conducted a study in the dialysis department of Assuit University hospitals to know the relation of stretching exercise in relation to muscle cramps among the patients suffering chronic renal failure. 60 patients with muscle cramps who are undergoing hemodialysis were chosen for the study. The study was done under quasi experimental design. By this study it is clearly noticed that the patients didn't have any knowledge regarding the muscle cramps before giving the teachings. After the exercise patterns there observed a statistical improvement in the quality of life of the hemodialysis patients.

Richard J Coppin, Dorothy M Wicky and Paul S Little., 2005 conducted a study regarding the management of the nocturnal leg cramps to know the exercise benefits over the medicine quinine. A total of 191 patients undergoing quinine treatment was selected and advised them to stop the quinine and insisted them to do exercises (mainly stretching) for a total period of six weeks. After the period of 6 weeks they are advised to take quinine along with the exercises. After successful completion of 12 weeks, the results say that there

was no difference in the number of cramps as compared to the previous week. So, the study states that there are no special benefits in doing the calf muscle strengthening exercises with the complete stoppage of quinine.

Kannan., 2005 conducted a study based on the treatment modalities for nocturnal leg cramps. The study was based on the pharmacological as well as the non-pharmacological therapies. The non-pharmacological therapies such as the calf muscle strengthening exercises, massaging etc. were used, and their findings reveals that there are no side effects by doing the stretching exercises compared to the pharmacological therapies.

Steven R, McGee, 1990 conducted a study regarding the skeletal muscle contraction and cramp related pain among hemodialysis patients. The cramps may be classified as examples of true cramp, tetany, contracture, or dystonia. Although many therapies have been proposed for ordinary cramps, the best evidence supports stretching exercises and quinine. The research concludes that after providing the muscle stretching exercise and the quinine the pain level of the hemodialysis patients reduced.

Studies related to effect of stretching exercises on hemodialysis patients.

Dan Bayliss, (2006) conducted a study on intradialytic exercise program for hemodialysis patients and he selected 30 patients and intradialytic exercise program was taught and tests such as the six-minute walk test, a gait speed test and sit to stand test was used to evaluate initial patient physical ability. The study reveals that their improvement in physical ability due to the exercise program in about 50% of the cases. Hence intradialytic exercise programmes are important to enhance the physical functioning and to improve overall health.

Kristen P. Koh, Robert G. Fasset, (2009) conducted a randomized controlled trial on intradialytic versus home-based exercise training in hemodialysis patients at renal research centre. He selected seventy-two patients to receive either intradialytic exercise

training or home-based training or usual care. The intervention was given for a month. The study reveals that home-based training is more cost-effective training program in hemodialysis patience. Hence the researcher conclude home based training has more benefits than the intradialytic training programme.

Mika L. Nonoyama, Dina Brooks, Devins., (2010) conducted a prospective longitudinal study on exercise program to enhance physical performance and quality of life of older hemodialysis patients. By convenient sampling technique, nine participants were selected and exercise programme was performed for three weeks and measured by duke activity index. The study reveals that patients showed a gradual increase in the amount of exercise performance over 12 weeks. Hence the researcher concludes these exercise program should benefit in the improvement of quality of life in above 60% among hemodialysis patients.

CONCEPTUAL FRAMEWORK:

Conceptual framework is a set of interrelated concepts that symbolically represent and convey a mental image of a phenomenon., **(Nancy Burns, 2001)**

The present study aims at evaluating the effectiveness of intradialytic muscle stretching exercise among the hemodialysis patients whom are all having the muscle cramp pain. The conceptual framework used in this study is Modified Wiedenbach's helping art of clinical nursing theory.

Ernestine Wiedenbach is the founder of the conceptual framework that used in the study and it is formulated in the year 1964.

The theory consists of two parts:

(a) Helping art of clinical nursing theory

(b) Nursing practice.

Helping art of clinical nursing theory is one of the authoritative theory for nursing and which mainly describes about a desired action and the various ways in order to attain it. It mainly consists of three factors, central purpose, prescription, and the realities.

Central purpose: mainly refers to what the researcher wants to attain from the study. In simple it is the overall goal to be achieved. It is the assignment or task that directing a researcher towards the accomplishment of the specific goal.

The central purpose of the study is to reduce and prevent the occurrence of pain during muscle cramps among the hemodialysis patients after performing the intradialytic stretching exercises.

Prescription: is the plan carried out in caring a patient. It mainly includes the action as well as the rationale for that particular action which fulfils the central purpose.

In this study the procedure that was used among the treatment group was intradialytic stretching exercises. The total duration of the procedure was about 15 minutes and after the

respective time period assessment was done in order to find out the level of pain during muscle cramps among the patients by the usage of numerical pain scale.

Realities: refer to the physiological, emotional, physical and spiritual factors that are involved in the nursing actions. There are mainly five realities they are:

a). Agent: They are the one who directs the actions against the goal and who also have good capabilities, competence, commitment and capacities in order to provide good and foremost care.

In this study the agent is the person who done the research, who guides the action proceeding to the goal.

b). Recipient: One who receives all the attention and who is also in the vulnerable group.

Here the recipient is the person who experiences pain during muscle cramps while undergoing hemodialysis.

c). Goals: It is the desired result obtained from the action.

The goal that we need to be achieved is to reduce and prevent the occurrence of pain during muscle cramps.

d). Means: The activities that we used to achieve the target are called mean.

In this study the intradialytic muscle stretching exercise that we used to reduce the pain during muscle cramps among the hemodialysis patients is considered as the mean.

e). Framework: The facilities that we used to perform the mean.

It refers to the dialysis units in selected hospitals, Kerala.

Wiedenbach's nursing practice includes 3 important things: identification, ministration and validation.

Identification: The individuals unique perceptions and experiences are referred as identification.

In this study the sample selection and the assessment of muscle cramps done among the samples.

Ministration: provision to the need of help is termed as ministration.

In this study the ministration is the administration of the muscle stretching exercise to the experimental group as well as the routine care to the control group.

Validation: It is the restoration of quality of life and the physical ability after implementing action plan.

The assessment that done before and after the intradialytic stretching exercise to know the level of pain during muscle cramps helps the researcher to validate the results.

CHAPTER III

METHODOLOGY

Methodology deals with the research approach, research design, variables, setting of the study, population, criteria for selection of the samples, sample size, sample technique, description of the tool, scoring procedure, pilot study, data collection procedure, data analysis and protection of human rights.

According to Ploit and Hungler, (2004) the research methodology mainly refers to the ways of obtaining, organizing and analysing the given data according to the researcher.

Research approach:

Research approach is defined as a general set of orderly discipline procedures used to acquire information. Ploit and Hungler, (2004).

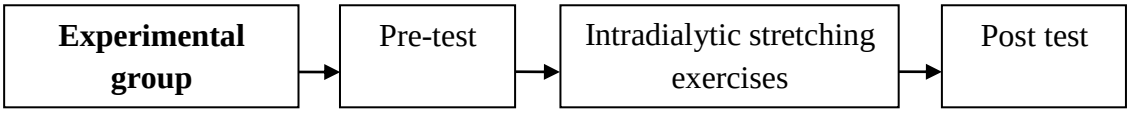
Quasi experimental research approach was used in this study in order to determine the effectiveness of intradialytic muscle stretching exercises in reducing the level of pain during muscle cramps among the patients undergoing hemodialysis.

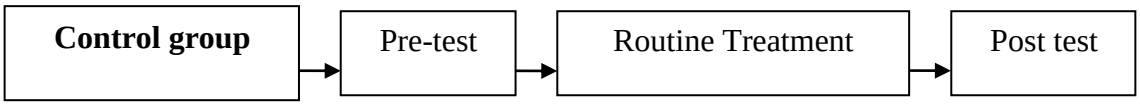
Research design:

Research design is defined as the overall plan for addressing the research questions, including the specifications for enhancing the study integrity., Ploit and Hungler, (2004).

Study Design: Quasi Experimental Design Pre-Test Post-Test Among Control Group:

Quasi experiments are like true experiments that involve an intervention. This design lack randomization, the signature of a true experiment. The signature of a quasi-experimental design is an intervention in the absence of randomization. The pre-test post-test designs are widely used in behavioral research primarily for the purpose of comparing the groups resulting from the experimental treatment (Polit, 2009).





G_1 O_1 ⟶ X_1 X_1 ⟶ O_2

G_2 O_1 ⟶ X_0 ⟶ O_2

G_1 – Intervention group

G_2 – Comparison group

X_1 – Performing the intradialytic muscle stretching exercises during the 3 to 4 hours of dialysis session for every 15 minutes.

X_0 – Routine treatment which includes 25% dextrose administration during the intradialytic period.

O_1 – Pretest assessment of muscle cramps using the numerical pain scale score.

O_2 – Posttest (Numerical pain rating scale)

Variables of the study:

Independent Variable: Intradialytic Muscle stretching exercises is the variables that we incorporated in the study.

Dependent Variable: The level of pain during the cramps is considered as the dependent variable.

Extraneous variables: In this study the extraneous variables are Age, Sex, Education, Occupation, Monthly Income, Duration of Illness, Duration of Dialysis and any Associated illness.

Setting of the study: This study was conducted in MIMS THANAL dialysis centre, Vadakara in Kerala. It is a 55 bedded dialysis unit. For each month about 318 patients were undergoing dialysis. There are four shifts each day and in which each shift constitutes about 50-55 patients. There are highly efficient staff nurses and dialysis technicians for proving good care. Training programs were conducted from the hospital side to upgrade the knowledge among the staffs and technician to provide a quality care to the patients.

Population:

The target population for the study was patients undergoing hemodialysis. The accessible population for the study was 60 patients undergoing hemodialysis in a selected hospital.

Sampling:

The sample for the present study was patients undergoing hemodialysis in a selected hospital.

Sampling technique and sample size: The patients were selected based on the purposive sampling and wants to meet the inclusion criteria too. A total of 60 samples were chosen, in that 30 samples assigned to intervention group as well as the 30 samples assigned to comparison group.

Sample Selection criteria:

Inclusion Criteria:

- Patients with age group greater than 30.
- Patients can understand English.
- Patients with chronic renal failure and having muscle cramps.
- Patients who are all co-operative and willing to participate.

Exclusion Criteria:

- Patients who are all undergoing emergency and with first hemodialysis session.
- Patients with femoral catheter for dialysis.
- Patients with any disabilities in the lower limb.

Instruments and tool for data collection:

SECTION A

PART A: **Demographic Data:** This part includes the age of the patient, gender, diagnosis, duration of the illness, number of hemodialysis session undergone, educational qualification and occupation of the patient.

PART B: **Clinical Variables:** This part includes the duration of the hemodialysis treatment, patient sittings in a week, time when experiencing the cramps, Location of the muscle cramps, Muscles that involved in the cramps, any associated medical conditions and the Quality of life.

SECTION B: **Numerical pain scale reading.**

The numerical pain scale was interpreted to assess the level of pain occurring during muscle cramps during the hemodialysis session, before and after giving the interventions. The scale contains various features related to the muscle cramps that mainly include the severity and intensity of the level of pain during muscle cramps, which was considerably scored that ranging from (0-10).

Score Interpretation:

0	No pain
1-3	Mild pain
4-6	Moderate pain
7-10	Severe pain

Validity and reliability of the study:

Content validity;

To ensure the content validity the tool the statement of the problem, objective, hypothesis, inclusion and exclusion criteria, intervention and criteria check list were given to four experts in nursing and one expert in medicine. Nursing experts were from medical surgical nursing and medical experts were from nephrology department. According to expert's opinion the tool and experiment were found to be valid. The modifications were done based on the expert's suggestion and incorporated in the study.

Reliability

Reliability of the tool was tested by test - retest method. 'Karl Pearson correlation' method was use to interpret the accuracy. The correlation co-efficient value obtained was 'r' = 0.90. It shows the flexibility of the tool. Expert opinions were observed to interpret the validity of the instruments and it is been tested by doing the pilot study. The reliability of the value obtained by the pilot study was 0.83.

Pilot study:

In order to check the feasibility and practicability, pilot study was conducted among 10 patients undergoing hemodialysis in a selected hospital. The pilot study was carried out and it was found feasible and practicable.

Techniques of data collection:

Data collection was performed for a total duration of 40 days. Questionnaire was used to conduct the pretest and the data collected was done by the interview technique from the patients. Numerical pain rating scale and were used to interpret the level of pain during muscle cramps.

Steps of intervention:

Intradialytic stretching exercises consists of

- Calf Stretching exercises (ankle densification)
- Soleus stretching
- Quadriceps stretching
- Gastrocnemius stretching
- Hamstring stretching

- During the third and fourth hours of the hemodialysis session the patients from the experimental group are advised to do intradialytic stretching exercises.
- Each session of the exercise lasts for about 15 minutes.
- Exercises were advised to do two times in each sitting.
- Exercises administered until the patients complete the post test
- Posttest assessment was performed during the fourth, seventh, and tenth sitting per the hemodialysis after completed the intervention.
- 25% dextrose were administered to the comparison group of patients during the intradialytic period.
- Post assessment of muscle cramps were performed during the hemodialysis.

Data collection procedure:

After obtaining the clearance from the institutional human ethics committee of the MIMS THANAL centre Vadakara. They provide a formal permission letter to conduct the study in their hospital. The samples are selected by considering the exclusion and inclusion

criteria. Informed consent was signed from the selected samples in order to perform the study. The intra dialytic stretching exercises was given after the pretest assessment, for the three days of sitting (i.e., first sitting, second sitting and third sitting) with half an hour interval gap for 2 times for 15 minutes duration, during each hemodialysis cycles in experimental group. The routine treatment administration of the 25% dextrose during the intra dialytic period was done in the control group. Posttest was done on the third day of sitting after the stretching exercises in experimental group and after the routine treatment in the control group, by numerical pain rating scale in both the groups.

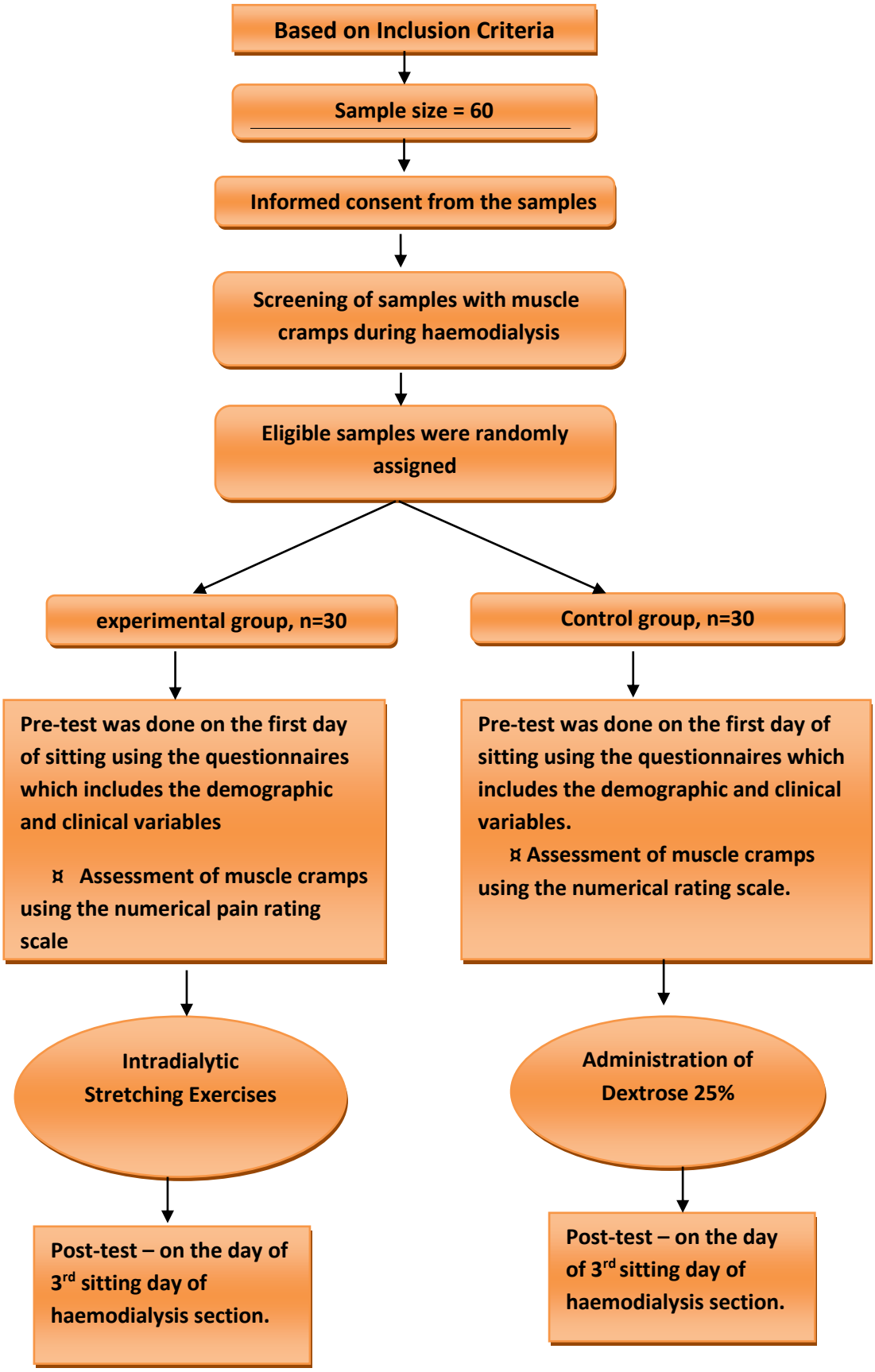


Figure 2 Data collection procedure

Data analysis plan:

The inferential and descriptive statistics were used for analysing the data

Paired 't' test:

It is used to find the difference between the level of muscle cramps among the pre and posttest in the both groups.

Independent 't' test:

This test was done to assess the difference in the level of post-test muscle cramps between the control and experimental group.

Protection of Human Rights

The study was conducted after the approval of research committee in the college and the hospital. The nature and purposes of this study was explained to the patients who participate in this study. The written consent was obtained from the study participants to gain full cooperation. Assurance was given to the study samples that the anonymity and confidentiality was maintained throughout the study. The muscle stretching exercises was suggested and taught to the control group after the posttest to overcome the ethical issues.

CHAPTER-IV

DATA ANALYSIS AND INTERPRETATION

This chapter mainly deals with the interpretation and analysis of data that collected from 60 hemodialysis. patients in order to assess the effectiveness of the level of pain during muscle cramps in the intradialytic period.

The important purpose of the evaluation was to convert the data which was collected to an interpretable and intelligible form, so we can able to study and test the relation of the research problem.

According to the Polit and Hungler (2015), analysis is the method of organizing, sorting and scrutinizing data in such a way that research question can be answered.

To determine and to clarify the data that gained during the data collection from the pain scale assessment tools. The inferences were calculated by using the descriptive (frequency, mean, distribution, standard deviation and percentage) inferential statistics (Chi square test, paired t test).

The study findings are presented in sections as follows:

Section I: Data on demographic variables and clinical variables of clients undergoing hemodialysis.

Section II: Data on level of pain during muscle cramps among clients undergoing hemodialysis.

Section III: Data on effectiveness of intradialytic stretching exercise on muscle cramps among clients undergoing hemodialysis.

Section IV: Data on association between level of pain during muscle cramps among clients undergoing hemodialysis with their selected demographic variables in experimental and control group.

SECTION I: DATA ON DEMOGRAPHIC VARIABLES AND CLINICAL VARIABLES OF CLIENTS UNDERGOING HEMODIALYSIS

Table: 1.1

Frequency and percentage distribution of clients undergoing hemodialysis according to their selected demographic variables in the experimental and control group.

(n=60)

Sl. No	Demographic Variables	Experimental group		Control group	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
1.	Age (in years)				
	a) 35-44	2	6.6	6	19.9
	b) 45-54	13	43.2	13	43.3
	c) 55-64	10	33.3	4	13.3
	d) 65-74	5	16.6	7	23.3
2.	Gender				
	a) Male	15	49.5	18	59.4
	b) Female	15	49.5	12	39.6
3.	Duration of CKD				
	a) 0-1 years	11	36.6	5	16.6
	b) 2-3 years	8	26.6	11	36.6
	c) >3 years	11	36.6	14	46.6

(Contd.,)

Sl. No	Demographic Variables	Experimental group		Control group	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
5.	Education				
	a) Illiterate	10	33.3	19	63.3
	b) High school	16	53.3	2	6.6
	c) Higher secondary	1	3.3	1	3.3
	d) Graduate	3	10	6	20
	e) Post-graduate	0	0	2	6.6
6.	Occupation				
	a) Unskilled worker	3	10	0	0
	b) Professional	1	6.6	3	10
	c) House wife	15	50	6	20
	d) Unemployed	11	36.6	21	70

Table 1.1 shows that out of 30 subjects in experimental group 2(6.6%) belongs to the age group between 35-44 years, 13(43.2%) belongs to the age group between 45-50 years, 10(33.3%) belongs to the age group between 55-64 years, 5(16.6%) belongs to the age group between 65-74 years. Out of 30 subjects in control group 6(19.9%) belongs to the age group between 35-44 years, 13(43.3%) belongs to the age group between 45-54 years, 4(13.3%) belongs to the age group between 55-64 year, 7(23.3) belongs to the age group of 65-74.

Regarding gender in experimental group, 15(50%) were males and 15(50%) were females. In control group, majority 18(60%) were males and 12(40%) were females.

Regarding the duration of chronic kidney disease, in experimental group 11(36.6%) were between 0-1 year, 8(26.6%) were between 2-3 year, 11(36.6%) were more than 3 years. In control group 5(16.6%) were between 0-1 year, 11(36.6%) were between 2-3 year, 14(46.6%) were more than >3 years.

Regarding in education, in experimental group 10(33.3%) were illiterate, 16(53.3%) were high school, 1(3.3%) were having higher secondary education, 3(10%) were graduate. No one have post graduate. In control group 19(63.3%) were illiterate, 2(6.6%) were high school, 1(3.3%) clients were having higher secondary education, 6(20%) were graduate, 2(6.6%) were post-graduate.

Regarding occupation, in experimental group 3(10%) were unskilled worker, 1(6.6%) were working in professional area, 15(50%) were house wife, 11(36.6%) were un employed. In control group 0(0%) were unskilled worker, 3(10%) were working in professional area, 6(20%) were house wife, 21(70%) were un employed.

The table 1.1 disclose that almost half of the clients belongs to the age group of 45-54 years which consists of about 13 (43.3%) clients belonging to the interventional group and about 13 (43.3%) clients belongs to the comparison group. Majority of the clients in the study were males which consists of about 15(50%) patients where in the interventional group and about 18 (60%) patients belongs to the comparison group. Almost all the patients have chronic kidney disease beyond 3 years which consists of about 11 (36.6%) clients among the interventional group and about 14 (46.6%) clients belonging to the comparison group. 50% of the patients undergone hemodialysis session for more than 400 times which includes 12(40%) patients in the interventional group and about 17(56.6%) clients belongs to the comparison group. About 10 (33.3%) clients from the interventional group and about 19 (63.3%) clients who belongs to the comparison group were considered as illiterate. About

11(36.6%) clients whom belongs to the intervention group and about 21 (70%) clients whom in the comparison group were unemployed too.

TABLE 1.2

Frequency and percentage distribution of clients undergoing hemodialysis according to their selected clinical variables in the experimental and control group.

n=60

Sl. No	Clinical variables	Experimental group		Control group	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
1.	Duration of hemodialysis treatment (years)				
	a) 1-2	0	0	0	0
	b) 2-4	9	30	3	10
	c) >4	21	70	27	90
2.	Hours during hemodialysis				
	a) 4 hours	30	100	30	100
	b) 6 hours	0	0	0	0
3.	Sittings per week				
	a) Twice	18	60	13	43.3
	b) Thrice	12	40	17	56.6
4.	Cramps during hemodialysis				
	a) Middle hour	5	16.6	15	50
	b) Last hour	25	83.3	15	50
5.	Activities and movement restriction				
	a) Yes	30	100	30	100
	b) NO	0	0	0	0

(Contd.,)

Sl. No	Clinical variables	Experimental group		Control group	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
6.	Location of muscle cramps				
	a) Right leg	3	10	5	16.6
	b) Left leg	13	4.3	12	40
	c) Both leg	14	46.6	13	43.3
7.	Muscles involved in cramps				
	a) Calf	15	50	21	70
	b) Hamstring	9	30	2	6.6
	c) Soleus	6	20	7	23.3
8.	Associated medical illness				
	a) Diabetes mellitus	10	33.3	10	33.3
	b) No associated medical illness	20	66.6	20	66.6
9.	Quality of life deteriorated				
	a) Very much	14	46.6	10	33.3
	b) Somewhat	16	53.3	20	66.6
	c) Not at all	0	0	0	0

Regarding the duration of hemodialysis in years, in experimental group 0(0%) were between 1-2 year, 9(30%) were between 2-4 year, 21(70%) were more than >4 years. In control group 0(0%) were between 1-2 year, 3(10%) were between 2-4 year, 27(90%) were more than >4 years.

Regarding the hours during hemodialysis, in experimental group 30(100%) total group under 4 hours treatment. No one have under 6-hour treatment. In control group 30(100%) total group under 4 hours treatment. No one have under 6-hour treatment.

Regarding the number of hemodialysis sitting per week, in experimental group 18(60%) were undergoing twice per week. 12(40%) were undergoing thrice per week. In control group 13(43.3%) were undergoing twice per week. 17(56.6%) were undergoing thrice per week.

Regarding cramps during hemodialysis, in experimental group 5(16.6%) were between middle hour, 25(83.3%) were between last hour. In control group 15(50%) were between middle hour, 15(50%) were between last hour.

Regarding the location of muscle cramps, in experimental group 3(10%) were experienced in right leg, 13(4.3%) were experienced in left leg, 14(46.6%) were experienced in both legs. In control group 5(16.6%) were experienced in right leg, 12(40%) were experienced in left leg, 13(43.3%) were experienced in both legs.

Regarding muscle involved in cramps, in experimental group 15(50%) were experienced in calf muscle, 9(30%) were experienced in hamstring muscle, 6(20%) were experienced in soleus muscle. In control group 21(70%) were experienced in calf muscle, 2(6.6%) were experienced in hamstring muscle, 7(23.3%) were experienced in soleus muscle.

Regarding the associated medical illness, in experimental group 10(33.3%) were affected with diabetes mellitus. 20(66.6%) were did not have any medical illness. In control group 10(33.3%) were affected with diabetes mellitus. 20(66.6%) were did not have any medical illness.

Regarding the quality of life deteriorated, in experimental group 14(56.6%) were deteriorated very much, 16(53.3%) were somewhat deteriorated. In control group 10(33.3%) were deteriorated very much, 20(66.6%) were somewhat deteriorated

The table 1.2 explains that about 90% of the clients underwent hemodialysis for beyond 4 years. Almost all the patients underwent hemodialysis for about 4 hours and they experience cramp pain in their muscles and which affects the quality of life. Almost all of the clients underwent hemodialysis twice per week. Almost all the clients experience cramps during hemodialysis especially at the last hours and which consists of about 25 (83.3%) clients with in the intervention group and in the comparison group it is about15(50%) clients. Approximately half of the clients who underwent hemodialysis experienced muscle cramps in their both legs which consists of about14(46.6%) clients belongs to the intervention group and about 13 (43.3%) patients belongs to the comparison group. Almost half of the patients experienced cramps in their calf muscles which mainly consists of about 15 (50%) clients belongs to the intervention group and about 21 (70%) clients belongs to the comparison group. Associated medical illness was felt about 30% of the total patients.

SECTION-II: DATA ON LEVEL OF PAIN DURING MUSCLE CRAMPS AMONG CLIENTS UNDERGOING HEMODIALYSIS.

Table 2.1

Frequency and Percentage distribution of level of pain during muscle cramps in the pre-test and post-test among the clients undergoing hemodialysis in experimental group.

n=30

Sl. No	Features of muscle cramps	Pre-test		Post-test	
		Frequency	%	Frequency	%
1.	No pain	0	0	5	16.5
2.	Mild pain (1-3)	0	0	14	46.2
3.	Moderate pain (4-6)	3	9.9	11	36.3
4.	Severe pain (7-10)	27	90	0	0

Table 2.1 reveals that in experimental group, in pretest 3 (9.9%) reported moderate pain and 27 (90%) reported severe pain. After intervention of muscle stretching exercises in posttest 5 (16.5%) didn't report any pain,14(46.2) reported mild pain and 11 (36.3%) reported moderate pain and no one reported severe pain.

It was inferred that, majority of the patients in experimental group having severe pain in pretest. After intervention of muscle stretching exercises given the most of the patients feels only mild pain at posttest in experimental group.

Table 2.2

Frequency and Percentage distribution of level of pain during muscle cramps in the pre-test and post-test among the clients undergoing hemodialysis session among the control group.

n=30

Sl. No	Features of muscle cramps	Pre-test		Post-test	
		Frequency	%	Frequency	%
1.	No pain	0	0	0	0
2.	Mild pain (1-3)	0	0	4	13.2
3.	Moderate pain (4-6)	7	23.1	26	85.8
4.	Severe pain (7-10)	23	75.9	0	0

Table 2.2 reveals that in control group, in pretest 7 (23.1%) reported moderate pain and 23 (75.9%) reported severe pain. During posttest 4 (13.2%) reported mild pain, 26(85.8) reported moderate pain and no one reported severe pain.

It was inferred that, majority of the patients in control group having severe pain in pretest. And most of the patients feel mild and moderate pain at posttest in control group. The result states that there are no noticeable effects in reduction of the muscle cramps during the hemodialysis session with the regular treatment.

SECTION - III: DATA ON EFFECTIVENESS OF INTRADIALYTIC STRETCHING EXERCISES ON LEVEL OF PAIN DURING MUSCLE CRAMPS AMONG CLIENTS UNDERGOING HEMODIALYSIS.

Table 3.1

Mean, standard deviation, Mean Difference and 't' value of post test score on level of pain during muscle cramps Among Clients Undergoing Hemodialysis.

n=60

Sl. No	Study group	Level of pain		't' Test	't' Table value
		Mean	SD		
1.	Experimental group (post-test)	2.43	1.4	7.05*	2.0
2.	Control group (post-test)	4.8	1.009		

Statistically Significant -*p<0.05

Table 3.1 reveals that posttest mean score of level of pain during muscle cramps among patients under going hemodialysis in experimental group was 2.43 which is lower than the posttest mean score of 4.8 in control group. The standard deviation of experimental group was 1.4 and the standard deviation of control group was 1.009. The obtained 't' value was 7.05 which is highly significant at p<0.05 level. The 't' value 7.05 is greater than table value (2.0). Hence the stated hypothesis (H_1) was accepted.

H_1: There is a significant difference in the post-test level of pain during muscle cramps among patients undergoing hemodialysis in experimental group and control group.

SECTION-IV: DATA ON ASSOCIATION BETWEEN LEVEL OF PAIN DURING MUSCLE CRAMPS AMONG CLIENTS UNDERGOING HEMODIALYSIS WITH THEIR SELECTED DEMOGRAPHIC VARIABLES IN EXPERIMENTAL AND CONTROL GROUP.

Table 4.1

Frequency, Percentage and chi-square Distribution of level of pain during muscle Cramps Among clients undergoing Hemodialysis with the selected demographic variables.

n=60

Sl. No	Demographic variables	Mild pain	Moderate pain	Severe pain	Chi-Square value	Table value
		f (%)	f (%)	f (%)		
1.	Age in years					
	a) 35-44	0(0)	0(0)	8(13.3)	2.854 NS df=3	7.81
	b) 45-54	0(0)	4(6.6)	22(36.6)		
	c) 55-64	0(0)	4(6.6)	10(16.6)		
	d) 65-74	0(0)	2(3.3)	10(16.6)		
2.	Gender					
	a) Male	0(0)	2(3.3)	31(51.6)	6.67* df=1	3.84
	b) Female	0(0)	8(13.3)	19(31.6)		
3.	Duration of the HD treatment in years					
	a) 1-2	0(0)	0(0)	0(0)	18.74* df=1	3.84
	b) 3-4	0(0)	7(11.6)	5(8.3)		
	c) >4	0(0)	3(5)	45(75)		

(Contd.,)

Sl. No	Demographic variables	Mild pain	Moderate pain	Severe pain	Chi-Square value	Table value
		f (%)	f (%)	f (%)		
4.	Sitting per week				0.566 NS df=1	3.84
	a) Twice	0(0)	4(6.6)	27(45)		
	b) Thrice	0(0)	6(10)	23(38.3)		
5.	Location of muscle cramps				4.9 NS df=2	5.99
	a) Right leg	0(0)	3(5)	5(8.8)		
	b) Left leg	0(0)	2(3.3)	23(38.3)		
	c) Both legs	0(0)	5(8.3)	22(36.6)		
6.	Associated medical illness				0.911 NS df=1	3.84
	a) Diabetes mellitus	0(0)	2(3.3)	18(30)		
	b) No associated medical illness	0(0)	8(13.3)	32(53.3)		

NS-Not Significant, *-Significant

Table 4.1 envisages the substantive summary of chi-square analysis, which was used to bring out the association between the pain and demographic variables of the groups.

With regard to age, among 35-44 years no one had mild and moderate pain only 8(13.3%) had severe pain. Among 45-54 years no one had mild pain, 4(6.6%) had moderate pain, 22(36.6.6%) had severe pain. Among 55-64 years no one had mild pain, 4(6.6%) had moderate pain, 10(16.6%) had severe pain. In the age group 65-74 no one had mild pain, 2(3.3) had mild pain and 10(16.6) had severe pain. The obtained chi-square value was 2.8 which are not significant.so it is inferred that there is no significant association between the age group and the level of pain during muscle cramps among patients undergoing hemodialysis.

With regard to gender, among males 2(3.3%) had moderate pain, 31(51.6%) had severe pain. Among females 8(13.3%) had moderate pain, 19(31.6%) had severe pain. The obtained chi-square value was 6.67 which are significant at $p<0.05$ level and thus the stated hypothesis (H_2) is accepted. So, inferred that there is significant association between gender and level of pain during muscle cramps among patients undergoing hemodialysis.

With regard to duration of hemodialysis treatment in year, among 1-2 years no one had mild, moderate and severe pain. In 3-4 years 7(11.6%) had moderate pain, 5(8.3%) had severe pain. In more than 4 years 3(5%) had moderate pain, 45(75%) had severe pain. The obtained chi-square value was 18.7 which are significant at $p<0.05$ level and thus the stated hypothesis (H_2) is accepted. So, inferred that there is significant association between duration of hemodialysis treatment in year and level of pain during muscle cramps among patients undergoing hemodialysis.

With regard to sitting per week, among weekly twice patients 4(6.6%) had moderate pain, 27(45%) had severe pain. Among weekly thrice patients 6(10%) had moderate pain, 23(38.3%) had severe pain. The obtained chi-square value was 0.566 which are not significant.so it is inferred that there is no significant association between the sitting per week and the level of pain during muscle cramps among patients undergoing hemodialysis.

With regard to the location of the muscle cramps on the right leg 3(5%) had moderate pain, 5(8.8%) had severe pain. On the left leg 2(3.3%) had moderate pain, 23(38.3%) had severe pain. Among both legs 5(8.3%) had moderate pain, 22(36.6%) had severe pain. The obtained chi-square value was 4.9 which are not significant.so it is inferred that there is no significant association between the location of the muscle cramps and the level of pain during muscle cramps among patients undergoing hemodialysis.

With regard to associated medical illness among diabetes mellitus 2(3.3%) had moderate pain, 18(30%) had severe pain. Among no associated medical illness 8(13.3%) had moderate pain, 32(53.3%) had severe pain. The obtained chi-square value was 0.911 which

are not significant. So, it is inferred that there is no significant association between the associated medical illness and the level of pain during muscle cramps among patients undergoing hemodialysis.

Table 4.1 reveals that with regard to the experimental and control group demographic variables of gender and duration of hemodialysis treatment in years chi-square value there was a significant association between level of pain during muscle cramps among patients undergoing hemodialysis. Hence the stated hypothesis (H_2) was accepted.

H_2 -There is significant association between level of pain during muscle cramps among patients undergoing hemodialysis in the experimental and control group.

Regarding age in years, sitting per week, location of muscle cramps, associated medical illness are the demographic variables were not significant association between level of pain during muscle cramps among patients undergoing hemodialysis.

APPENDIX - A

ANNAI MEENAKSHI COLLEGE OF NURSING

Affiliated with the Tamil Nadu Dr. M.G.R Medical University, Chennai.
Approved by the Indian Nursing Council, New Delhi &
Tamil Nadu Nurses and Midwives Council, Chennai.

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Website : www.annaimeenakshi.in

Requisition for Content Validity

From

Ref. No. *Date :* .....

Mr.Tom Mathew
II year M.Sc., (N)
Annai Meenakshi College of Nursing,
Coimbatore – 21.

To

Respected Sir/Madam,

Sub: Requisition for expert opinion and suggestion for content validity of the tools – Reg.,

I am a student of M.Sc., Nursing II year of Annai Meenakshi College of Nursing, Coimbatore, affiliated to The Tamil Nadu Dr. M.G.R. Medical University, Chennai. As a partial fulfillment of the M.Sc., Nursing programme. I am conducting **"A Study To Assess The Effectiveness Of Intradialytic Stretching Exercises On Prevention And Reduction Of Muscle Cramps Among Patients Undergoing Hemodialysis."**. I am hereby enclosing the following:

1. Statement and objectives of the study
2. Hypothesis
3. Methodology
4. Intradialytic Stretching Exercises
5. Tool
6. Content Validity certificate.

Herewith I am submitting these for content validity and for expert opinion and possible suggestion. I will be grateful to you and request you to return the same to the undersigned at the earliest possible.

Thanking you,

Yours faithfully,

Place: Coimbatore

Date:

PRINCIPAL
Annai Meenakshi College of Nursing
COIMBATORE-641 021.

APPENDIX - B

ANNAI MEENAKSHI COLLEGE OF NURSING

Affiliated with the Tamil Nadu Dr. M.G.R Medical University, Chennai.
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Tamil Nadu Nurses and Midwives Council, Chennai.

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P.B. No. 4431
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Fax : 0422 - 2676016
Email : ceandct@gmail.com
Website : www.annaimeenakshi.in

Ref. No.

Date : .....

Certificate of Validation

This is to certify that the tools developed by Mr. Tom Mathew M.Sc (N) II - Year student of Annai Meenakshi College of Nursing, Coimbatore, Tamil Nadu (Affiliated to The Tamil Nadu Dr. M.G.R. Medical University, Chennai) is validated by undersigned and can proceed with this tool and conduct the main study for dissertation entitled **"A Study To Assess The Effectiveness Of Intradialytic Stretching Exercises On Prevention And Reduction Of Muscle Cramps Among Patients Undergoing Hemodialysis."**.

Place: Coimbatore

Signature

Date:

APPENDIX - D

MIMS - THANAL
DIALYSIS CENTRE

www.thanalvatakara.com
thanalvatakara@gmail.com

22.12.2017

Vadakara

Sir,

This is to be state that **Mr.Tom Mathew** , M.Sc. Nursing II year from Annai Meenakshi College of Nursing , Coimbatore has been given permission to conduct the study on "A Study to Assess The Effectiveness of Intradiaytic Stretching Exercises On Prevention and Reduction of Muscle Cramps Among Patients Undergoing Hemodialysis" at Mims Thanal Dialysis centre , Calicut from 01/01/2018 to 17/03/2018.

We extend a warm welcoming gratitude **to Tom Mathew** for doing research in our institution

Sincerely

NIMMYA FRANCIS
ADMINISTRATOR
THANAL
DAYA REHABILITATION TRUST
VADAKARA, REG. No: 09/08

Beach Road, Vatakara-3
Phone: 0496 2513474

President:
Dr. Idrees. V
Ph: 9745336020

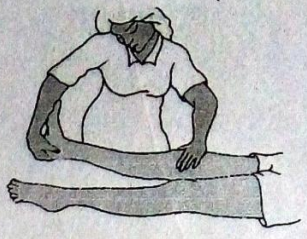
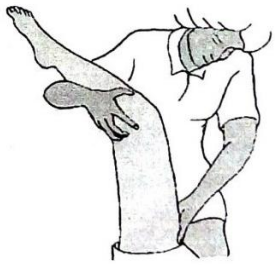
General Secretary:
M.K. Mansoor
Ph: 9846085950

Treasurer:
V. Masahir
Ph: 9846088550

APPENDIX-G

PROCEDURES

INTRADIALYTIC STRETCHING EXERCISES

Exercise	Description	Picture
Ankle Dorsification	• Place the non dominant hand over the knee to stabilize the knee • Place the dominant hand under the heel, with the foot against the forearm, and push the heel downward with this hand. • Hold the position for 20-30 seconds. • Repeat the action for 5 times.	
Gastrocnemius-Passive Stretch	To stretch one muscle (the gastrocnemius), extend the knee, place the other hand on top of the ankle, and push in the opposite direction	
Soleus-Passive Stretch	To stretch the second muscle (the soleus), flex the knee, place the other hand under the calf, and push in the opposite direction.	
Hamstring Stretching	**METHOD 1** • Kneel between the legs and support the ankle with your arm or shoulder. • The knee will be straight. • Place one or both hands just above your knee, stabilizing the hip joint. • Raise the leg straight up to approximately 90 degrees. • Hold it for 20-30 seconds. • Repeat the action for 5 times.	

METHOD 2

- Place one hand under the knee and the other hand under the heel.
- With the knee straight and the kneecap pointed toward the ceiling, raise the whole leg toward the ceiling.
- When the raised knee begins to bend slightly, the hand under your knee should be moved to the top of your knee.

ACKNOWLEDGEMENT

DEDICATION

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CHAPTER - III

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THANK YOU

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APPENDIX - E

LETTER SEEKING CONSENT OF SUBJECTS FOR PARTICIPENTS IN THE STUDY

Respected participants,

I am TOM MATHEW doing my second year M.Sc. (N) in Annai Meenakshi college of nursing. I am doing a research regarding Intradialytic muscle stretching exercise on the level of pain during muscle cramps among patients undergoing hemodialysis. I requested your cooperation to complete my research. I assure you that you won't get any harm due to my research.

I am Mr./Ms……myself has come to know about the effects of intradialytic muscle stretching exercises on the level of pain during muscle cramps among patients undergoing hemodialysis through TOM MATHEW. Here by I consent to undergo this therapy.

Yours sincerely,

Place:

Date:

APPENDIX - C

Name List of Experts Who Validated the Tool

- Dr. R. GANDHIMOHAN MD,DM (NEPHRO)

  CONSULTANT NEPHROLOGIST

  REG.54143

  COIMBATORE.

- Mrs. SANTHY PRIYA M.sc(N),

  Professor,

  K.G College of Nursing

  Coimbatore.

- Mr. FRANCIS M.sc(N)

  Professor,

  PPG College of Nursing

  Coimbatore.

- Mrs.UMA MAHESWARI M.sc(N)

  Professor

  PPG College of Nursing,

  Coimbatore.

- Mrs. VIJI M.sc(N)

  Professor

  KMCH College of Nursing,

  Coimbatore.

APPENDIX – F

STRUCTURED INTERVIEW QUESTIONNAIRE

PART A

Demographic Data:

1. Sample No:	
2. Age in years:	
3. Gender:	
4. Diagnosis:	
5. Duration of illness:	
5. Number of Hemodialysis:	
6. Education:	
7. Occupation:	

PART B

Clinical Variable

1. What is the duration of your dialysis treatment? ☐

    a) Days

    b) Month

    c) Years

2. How many hours you are being on dialysis in a day? ☐

    a) 4 hours

    b) 6 hours

    c) 8 hours

3. How many sittings of hemodialysis do you have in a week? ☐

    a) Once

    b) Twice

    c) Thrice

4. If yes, when do you experience the muscle cramp pain during hemodialysis? ☐

    a) First hour

    b) Middle hour

    c) Last hour

5. Do the muscle cramp pain restrict your activities and movements during hemodialysis? ☐

    a) Yes

    b) No

6. In which leg do you experience muscle cramp pain? ☐

    a) Right Leg

    b) Left Leg

    c) Both Leg

7. Where do you feel the cramp pain?

a) Calf

b) Thighs

c) Toes

8. Have you been diagnosed with medical condition?

a) Diabetes mellitus

b) Peripheral arterial disease

c) Cirrhosis of liver

d) Neurological disorder

e) Any other

9. Has your quality of life deteriorated because of muscle cramps?

a) Very much

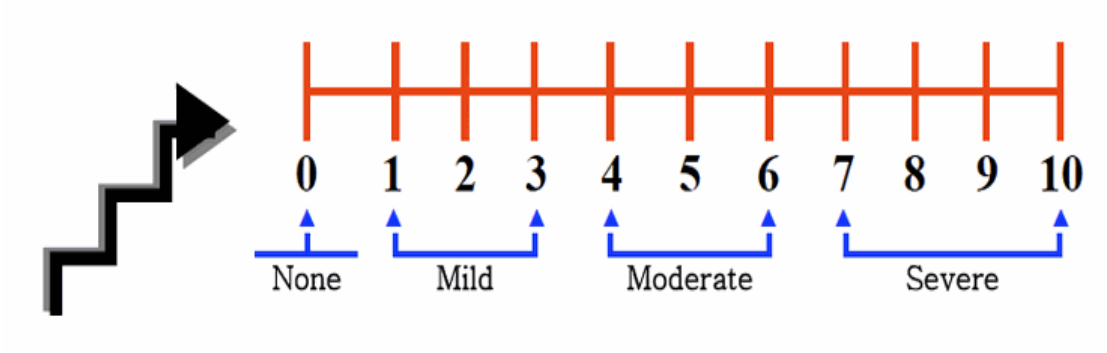
b) Somewhat

c) Not at all

PART C

STANDARDIZED NUMERICAL PAIN ASSESSMENT SCALE

Instruction: The samples are instructed to give response and touch the number in the scale according to the perception of pain.



Key interpretation:

Score	Level of Pain
0	No pain
1 – 3	Mild pain
4 – 6	Moderate pain
7 – 10	Severe pain

CHAPTER V

RESULTS AND DISCUSSION

The main aim of the study was, to assess the effectiveness of intradialytic stretching exercise on muscle cramps among clients undergoing haemodialysis in a selected hospital. The study was conducted by using Quasi-experimental pre-test and post-test control group design. MIMS – THANAL Dialysis Centre, Vadakara, was selected for conducting the study. The sample size was 60, among which 30 in experimental group and 30 in control group were selected by using structured interview schedule Standardized Numerical Pain Assessment Scale was administered to assess the level of pain during muscle cramps among patients undergoing haemodialysis.

The responses were analysed by using descriptive statistics (Mean, Standard deviation, Frequency, Percentage) and inferential statistics ('t' test and chi-square). Discussion on the findings was arranged based on the Findings obtained of the study from the statistical analysis.

The first objective was to assess the level of pain during the muscle cramps among patients undergoing hemodialysis in the experimental and control group.

Table 2.1 reveals that in experimental group, in pretest 3 (9.9%) reported moderate pain and 27 (90%) reported severe pain. Table 2.2 reveals that in control group, in pretest 7 (23.1%) reported moderate pain and 23 (75.9%) reported severe pain.

After intervention of muscle stretching exercises in posttest 5 (16.5%) didn’t report any pain,14(46.2) reported mild pain and 11 (36.3%) reported moderate pain and no one reported severe pain. During post-test 4 (13.2%) reported mild pain, 26(85.8) reported moderate pain and no one reported severe pain.

During the post-test moreover half of the client 14 (46.2%) experience only mild muscle cramps after performing the intervention. None clients felt severe muscle cramps. Only 11(36.3%) clients felt moderate muscle cramps. The results determine the usefulness of the intradialytic muscle stretching exercises in limiting the muscle cramps during the hemodialysis session.

Table 2.2 states that none of the clients experienced severe muscle cramps. And only 26(85.8%) client felt moderate muscle cramps. and 4(13.2%) of clients experience mild cramps. The results states that there is no noticeable effect in reduction of the muscle cramps during the hemodialysis session with the regular treatment

The second objective was to assess the effectiveness of the intradialytic muscle stretching exercises on the level of pain during muscle cramps in the experimental and control group.

Table 3 reveals that posttest mean score of level of pain during muscle cramps among patients under going haemodialysis in experimental group was 2.43 which is lower than the posttest mean score of 4.8 in control group. The standard deviation of experimental group was 1.4 and the standard deviation of control group was 1.009. The obtained ‘t’ value was 7.05 which is highly significant at $p<0.05$ level. The ‘t’ value 7.05 is greater than table value (2.0). Hence the stated hypothesis (H_1) was accepted.

In 30 patients only 11(36.6%) of the patient from experimental group. could experience muscle cramps pain. This result reveals that the obtained 't' value (7.05) is higher than the table value (2.0). The significant level is at $p<0.05$ So, the null hypothesis is rejected as there is a relevant change in the pain level during the muscle cramps after performing the intradialytic muscle stretching exercises among the experimental and control group in post-test, and the alternate hypothesis is accepted.

The study finding is also congruent with a study conducted by Manchunathan (2008) in Nephrology department, Karnataka to assess the effect of intradialytic

stretching exercise on Muscle Cramps among patients undergoing hemodialysis. Random sampling technique was used to select the study samples. 60 samples were selected, 30 samples were the experimental and 30 were control group. The results showed that there was a significant difference in the Muscle Cramps between experimental and control group after intradialytic stretching exercise at 0.05 level of significance. Thus, the intradialytic stretching exercise was effective in reducing Muscle Cramps among patients undergoing hemodialysis.

The findings are similar to the study conducted by Benny in (2015) from Tamil Nadu, which revealed that the mean score on level of Muscle Cramps among hemodialysis patients was 9.86 in pre-test and 3.51 in post test. The paired 't' value was 30.34 which is significant at $p < 0.05$. It shows that intradialytic stretching exercise was effective in reduction of Muscle Cramps among hemodialysis patients.

J. LEKHA in (2014) conducted a study and its findings were similar which revealed that posttest mean score of level of pain during muscle cramps among patients under going haemodialysis in experimental group was 0.7 which is lower than the posttest mean score of 2.73 in control group. The standard deviation of experimental group was 0.95 and the standard deviation of control group was 0.51. The obtained 't' value was 6.5 which is highly significant at $p<0.05$ level. The 't' value 6.5 is greater than table value (2.02). Hence the stated hypothesis (H_1) was accepted. It shows that intradialytic stretching exercise was effective in reduction of Muscle Cramps among hemodialysis patients.

The third objective was to determine the association between the level of pain during muscle cramps among the patients undergoing hemodialysis and the selected demographic variables in the experimental and control group.

Table 4 reveals that with regard to the experimental & control group demographic variables of gender and duration of haemodialysis treatment in years chi-square value were significant association between level of pain during muscle cramps among patients undergoing haemodialysis. Hence the stated hypothesis (H_2) was accepted.

H_2 -There is significant association between level of pain during muscle cramps among patients undergoing hemodialysis in the experimental and control group.

Regarding age in years, sitting per week, location of muscle cramps, associated medical illness are the demographic variables were not significant association between level of pain during muscle cramps among patients undergoing haemodialysis.

CHAPTER VI

SUMMARY AND CONCLUSION

This chapter deals with Summary, Conclusion and Recommendation of study. Further it includes implications for the Nursing practice, Nursing education, Nursing administration and Nursing research.

Summary of the study:

The present study focused on assess the level of pain during muscle cramps of patients undergoing hemodialysis by providing intradialytic stretching exercises during the third and fourth hour of the hemodialysis session.

The objectives of the study:

- To assess the level of pain during muscle cramps among patients undergoing haemodialysis in the experimental and control group.
- To assess the effectiveness of intradialytic muscle stretching exercises on level of pain during muscle cramps in experimental and control group.
- To determine the association between the level of pain during muscle cramps among the patients undergoing haemodialysis and the selected demographic variables in the experimental and control group.

The muscle cramps related literature is reviewed to reducing the muscle cramps pain. It reveals that in the last 2 hours of dialysis treatment the stretching exercise should be given in 30 minutes gaps to prevent and reduce the muscle cramps pain. Other studies reveal that stretching before sleeping will help to reduce the nocturnal cramps pain. Most of the study focused on the efficiency of the haemodialysis, muscle loss, functional performance etc. This study is mainly focused on the reduction and prevention of muscle cramps pain and the evidence-based practice is intradialytic stretching exercises.

In this study quasi experimental design is used pre-test post-test with control group. This study was conducted around 6 weeks of period with 60 samples who had muscle cramps during haemodialysis. This study is conducted in MIMS THANAL dialysis Centre. After getting the informed consent. By the interview method the data was collected. By using the numerical pain rating scale severity of the cramps pain was assessed (soring 0-10). During the third and fourth hour of hemodialysis the intradialytic stretching exercise were given passively to the samples for a period of 15 minutes twice per sitting. The data were analysed by using (mean, percentage, and standard deviation) and statistics by (independent t test, paired t test, chi-square analysis).

Major findings of the study:

The muscle cramps pain should be occurred mostly by the last one hour of haemodialysis. In experimental group 25(83.3%) patients and in the control group 15(50%) of patients. Nearly half of the patients have occurring the muscle cramps pain on the both legs. From the experimental group of 14(46.6%) patients and from the control group 13(43.3%) patients. Nearly half of the patients have occurring the muscle cramps pain in calf muscle. From the experimental group 15(20%) and from the control group 21(70%) patients.

In the pre-test most of the patients 27(90%) experience severe muscle cramps pain. After the exercise section 20(66%) patients didn't experience muscle cramps pain. While during the dextrose administration 26(86.6%) patients reported severe muscle cramps pain. The level of pain during muscle cramps in intradialytic is reduced by going intradialytic stretching exercises between the groups of ($p<0.05$).

While comparing the routine therapy and intradialytic muscle stretching exercises after the 3 sections of therapy in posttest there was a significant difference in level of pain in muscle cramps. Then the cramps pain should be relieved from continuous intradialytic stretching exercises was statistically proved. The 2 demographic variables age and duration of haemodialysis treatment in years is associated to the level of pain during muscle cramps.

Conclusion:

Muscle cramps is a subjective pain occurring in majority of patients undergoing haemodialysis. There are various methods available (pharmacological, non-pharmacological). For treating the level of pain during muscle cramps but it didn't help the complete relief. This study was taken to assess the effectiveness of intradialytic muscle stretching exercise in the level of pain during muscle cramps among patient undergoing haemodialysis in selected hospitals at Kerala for the treatment of level of pain during muscle cramps. This preventive therapy is more helpful. But it cannot be prevented by the administration of dextrose. Regular muscle stretching exercises will help in reducing the level of pain during muscle cramps among patients undergoing hemodialysis.

Implications of the study:

- The current study has implications for nursing research, nursing administration, nursing education, and nursing practice.

Nursing Practice:

- Nurses are in a better position to identify accurate assessment of level of pain during muscle cramps by using numerical pain rating scale.
- Nurses will develop a positive attitude towards the effect of intradialytic muscle stretching exercises on level of pain during muscle cramps among patient undergoing haemodialysis.

Nursing Education:

- Nursing colleges can educate the students to learn about the effectiveness of intradialytic muscle stretching exercise on level of pain during muscle cramps.
- Teaching personnel can arrange for student's participation in demonstrating the effectiveness of intradialytic muscle stretching exercise through audio visual aids and group discussion.

Nursing Administration:

- In service education program can be conducted for the staff nurses regarding intradialytic muscle stretching exercises.

Nursing Research:

- The study findings can be added to the research review regarding the effectiveness of intradialytic muscle stretching exercise on level of pain during muscle cramps.
- The study findings can be set as a base line data and further research can be conducted in same setting.

Recommendations:

- similar study can be conducted in different setting such as hospital, community, rehabilitation, centres etc. and with large sample size.
- A longitudinal study can be done having various data collection intervals at 6 months, 1 year, and 2 years after initiation of therapy.
- Effectiveness of intradialytic muscle stretching exercise can be compared with other complementary therapy in other chronic illness.

A STUDY TO ASSESS THE EFFECTIVENESS OF INTRADIALYTIC MUSCLE STRETCHING EXERCISES ON THE LEVEL OF PAIN DURING MUSCLE CRAMPS AMONG PATIENTS UNDERGOING HEMODIALYSIS IN A SELECTED HOSPITAL AT KERALA.

COIMBATORE

A DISSERTATION SUBMITTED TO THE TAMILNADU Dr. M.G.R. MEDICAL UNIVERSITY, CHENNAI IN PARTIAL FULFILMENT OF REQUIREMENT FOR THE DEGREE OF

MASTER OF SCIENCE IN NURSING

OCTOBER 2018

A STUDY TO ASSESS THE EFFECTIVENESS OF INTRADIALYTIC MUSCLE STRETCHING EXERCISES ON THE LEVEL OF PAIN DURING MUSCLE CRAMPS AMONG PATIENTS UNDERGOING HEMODIALYSIS IN A SELECTED HOSPITAL AT KERALA.

BY

TOM MATHEW

A DISSERTATION SUBMITTED TO THE TAMILNADU Dr. M.G.R. MEDICAL UNIVERSITY, CHENNAI IN PARTIAL FULFILMENT OF REQUIREMENT FOR THE DEGREE OF

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APPROVED BY THE DISSERTATION COMMITTEE ON……

RESEARCH GUIDE……

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Dr. R. GANDHIMOHAN MD., DM(NEPHRO).,

CONSULTANT NEPHROLOGIST, (REG NO: 54143),

COIMBATORE.

A DISSERTATION SUBMITTED TO THE TAMILNADU Dr. M.G.R. MEDICAL UNIVERSITY, CHENNAI, IN PARTIAL FULFILMENT OF REQUIREMENT FOR THE DEGREE OF

MASTER OF SCIENCE IN NURSING

OCTOBER 2018

CERTIFIED THAT THIS IS THE BONAFIDE WORK OF

TOM MATHEW

ANNAI MEENAKSHI COLLEGE OF NURSING,

COIMBATORE, TAMILNADU.

SUBMITTED IN PARTIAL FILFILMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF SCIENCE IN NURSING TO THE TAMILNADU DR. M.G.R. MEDICAL UNIVERSITY, CHENNAI

COLLEGE SEAL:

PROF. Mrs. M. MUMTAZ M.Sc.(N)., MBA(HM), M.Phil.,

PRINCIPAL

ANNAI MEENAKSHI COLLEGE OF NURSING,

COIMBATORE, TAMILNADU.

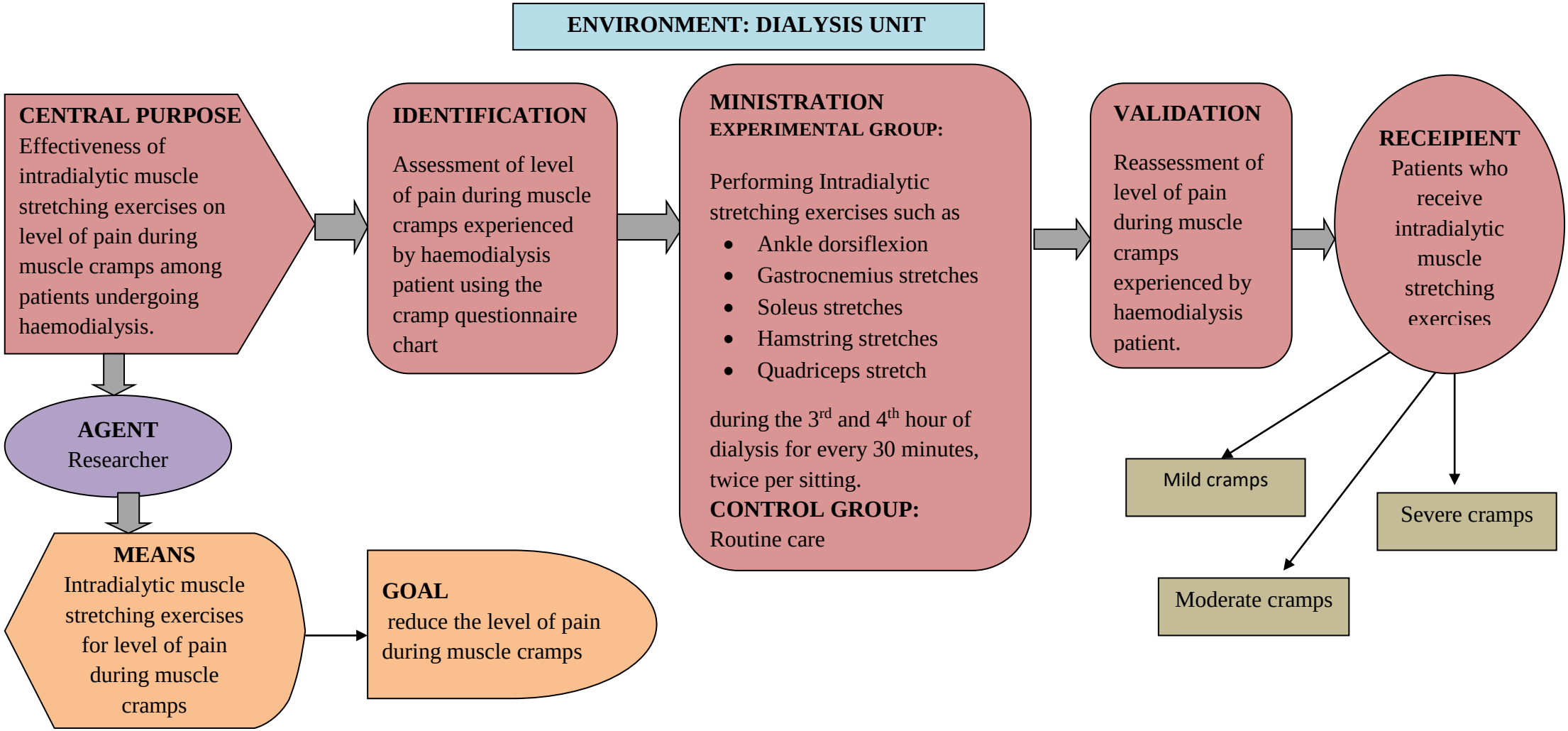

Figure 1 Modified Widenbach's Helping Art of Clinical Nursing Theory to assess the effectiveness of intradialytic muscle stretching exercises on the level of pain during muscle cramps.

APPENDIX-H

Intervention on intradialytic stretching exercises

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ABSTRACT

INTRODUCTION

Chronic kidney disease, also called chronic kidney failure, describes the gradual loss of kidney function. The kidneys filter wastes and excess fluids from the blood, which are then excreted in the urine. When chronic kidney disease reaches an advanced stage, dangerous levels of fluid, electrolytes and wastes can build up in your body. Hemodialysis is the common treatment for kidney failure. The muscle cramps are the common complication of the patients undergoing hemodialysis. Muscle Stretching is a form of physical exercise in which a specific muscle or tendon (or muscle group) is deliberately flexed or stretched in order to improve the muscle's felt elasticity and achieve comfortable muscle tone. The result is a feeling of increased muscle control, flexibility and range of motion. Stretching is also used therapeutically to decrease cramps. Muscle Stretching is a form of physical exercise in which a specific muscle or tendon (or muscle group) is deliberately flexed or stretched in order to improve the muscle's felt elasticity and achieve comfortable muscle tone during the patient undergoing hemodialysis. The result is a feeling of increased muscle control, flexibility and range of motion. Stretching is also used therapeutically to decrease cramps.

Statement of the problem

A study to assess the Effectiveness of Intradialytic Muscle stretching exercises on the level of pain during muscle cramps among patients undergoing hemodialysis in a selected hospital at Kerala.

Objectives

The objectives of this study were:

- To assess the level of pain during muscle cramps among patients undergoing hemodialysis in the experimental and control group.
- To assess the effectiveness of intradialytic muscle stretching exercises on level of pain during muscle cramps in experimental and control group.
- To determine the association between the level of pain during muscle cramps among the patients undergoing hemodialysis and the selected demographic variables in the experimental and control group.

Hypothesis

H_1 – There is a significant difference in the post test level of pain during muscle cramps among clients undergoing hemodialysis in the experimental and control.

H_2 – There is a significant association between level of pain during muscle cramps among clients undergoing hemodialysis and their selected demographic variables in the experimental and control group.

Research Design

The research design adopted was quasi experimental pretest posttest design with control group.

Sample

Non probability purposive sampling technique was adopted to select the desired samples. The samples were selected from MIMS – THANAL Dialysis Centre, Vadakara, Calicut. There are 30 samples in each experimental group and control group.

Intervention

The intradialytic muscle stretching exercise procedure was performed among the treatment group in the intradialytic period, after 2 hours stretching exercises was administered. The total duration of the procedure was about 15 minutes with an interval of 30 minutes.

Tool

The Standardized Numerical Pain Rating Scale was used to evaluate the effectiveness of intra dialytic muscle stretching exercises on the level of pain during muscle cramps among patient undergoing hemodialysis.

Result

The collected data were analyzed by using both descriptive and inferential statistical methods. The obtained ‘t’ value was 7.05 which is highly significant at $p<0.05$ level. The ‘t’ value 7.05 is greater than table value (2.0).

Conclusion

The study revealed that the intradialytic muscle stretching exercises during the hemodialysis sessions helps in reducing the pain during the muscle cramps among patients undergoing hemodialysis.

Keywords used:

Intradialytic muscle stretching exercises; Muscle cramps; Routine care; Hemodialysis; muscle cramps.

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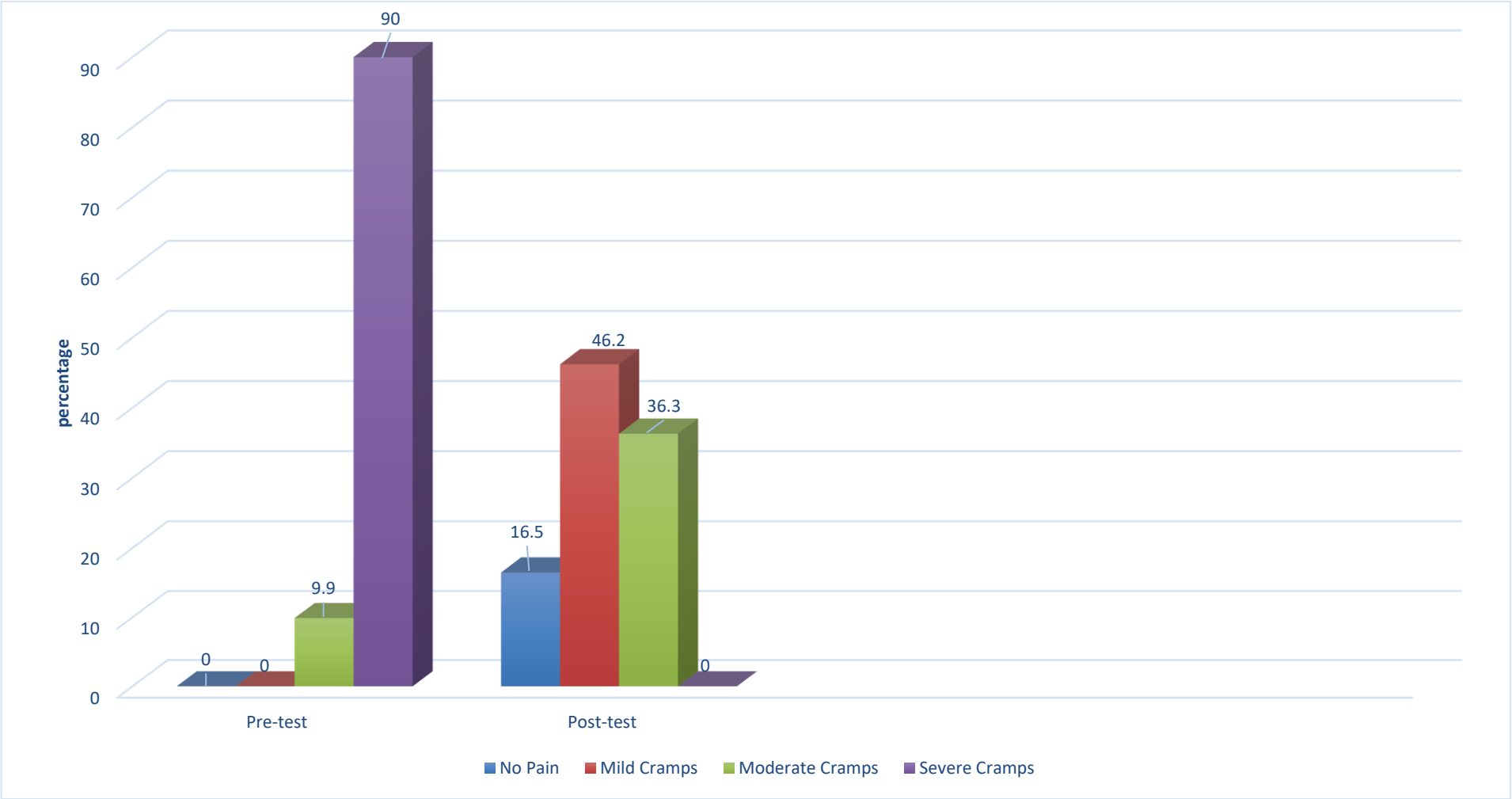

Figure 3: A column chart showing the pre and post-test level of pain during muscle cramps among clients undergoing hemodialysis in experimental group

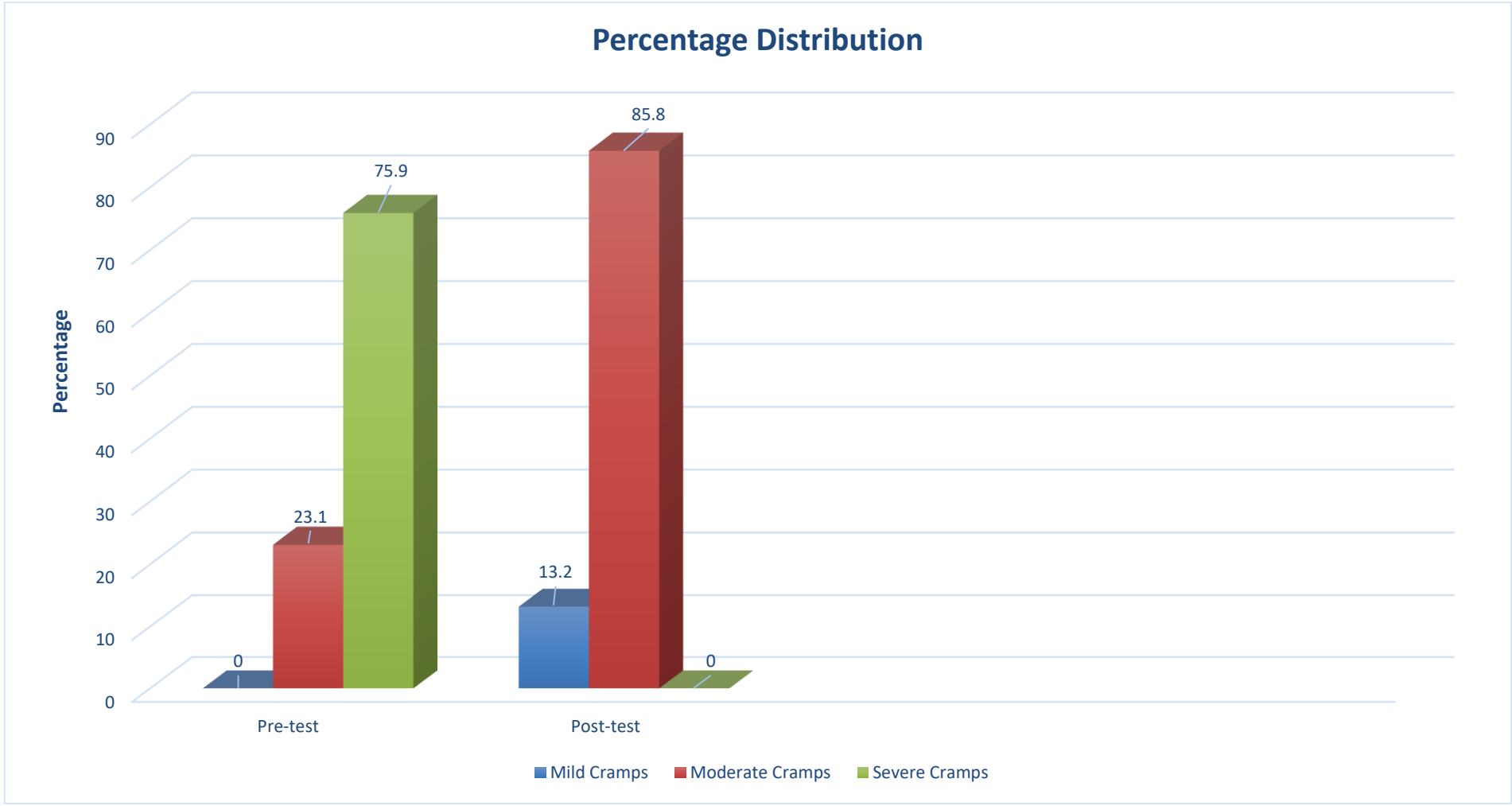

Figure 4: A column chart showing the pre and post-test level of pain during muscle cramps among clients undergoing hemodialysis in control group.

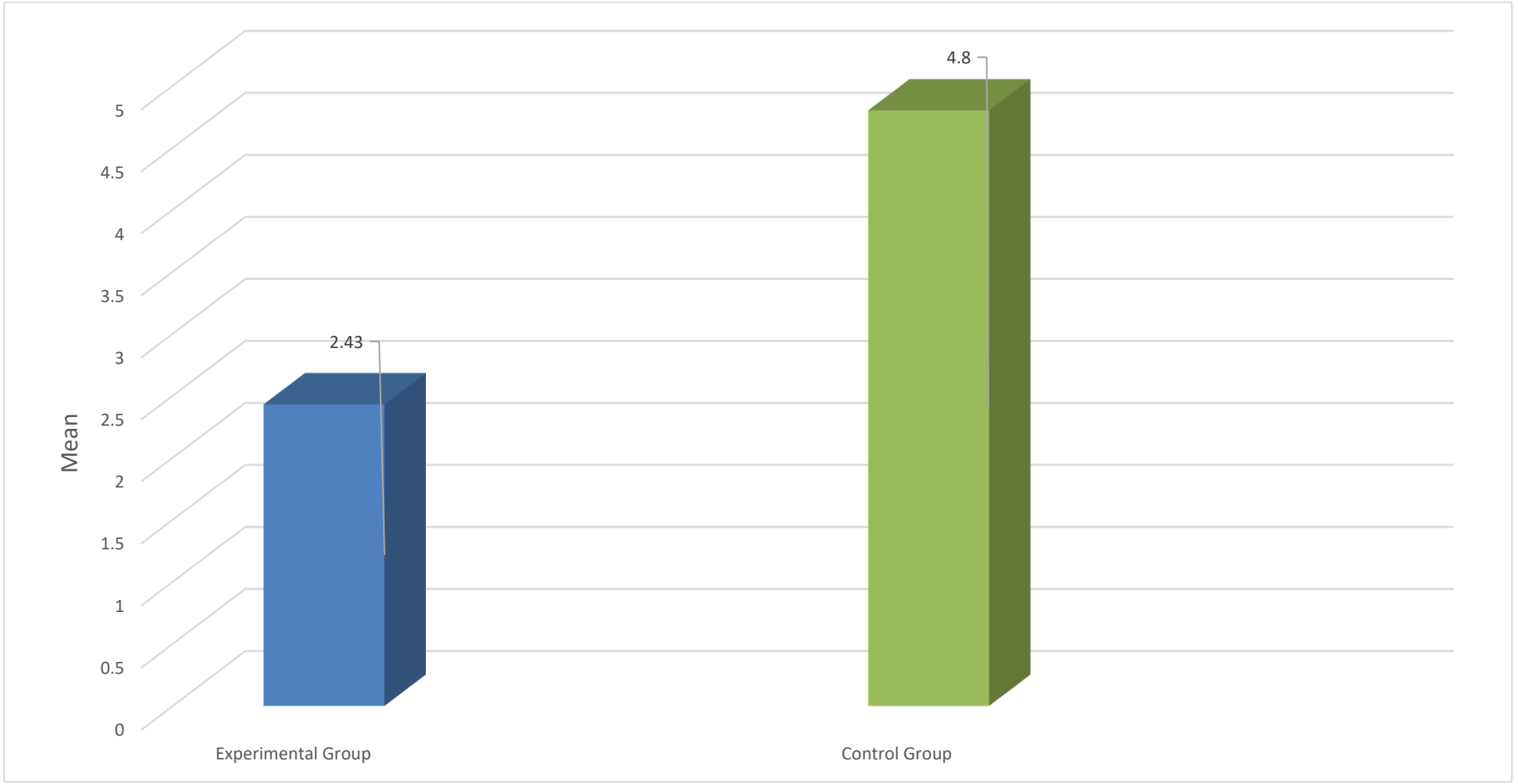

Figure 5: A column chart showing the mean post-test level of pain during muscle cramps among clients undergoing hemodialysis in experimental and control group